Smart Antenna makes us the perfect choice for 802.11ac one-to-one replacement

- **ZyXEL smart antenna provides premium performance anywhere**
- **Advanced IEEE 802.11ac offers up to 1.75 Gbps combined data rates**
- **Industry-leading Rx sensitivity as low as -102 dBm**
- **AP Flex™, ZyXEL ONE Network utilities, DCS and tool-less bracket design streamline deployment**
- **Load balancing and client steering ensure optimal wireless experience**

In the Gigabit era in Wi-Fi connectivity, upgrading to the 802.11ac standard represents the next step in wireless evolution. Many enterprises looking to break the 1-Gbps speed barrier face the challenge of replacing existing 802.11n access points. While 802.11n operates on both 2.4 GHz and 5 GHz frequency band, 802.11ac utilizes the 5GHz band, and the higher frequency of wireless signals adds up to shorter ranges. Before, transitioning from 802.11n to 802.11ac involved costly and time-consuming new wireless site surveys and the deployment of additional APs.

The ZyXEL Smart Antenna is a groundbreaking feature of the WAC6500 series of wireless APs that solves this problem by adaptively adjusting antenna patterns to fit a variety of wireless environments. The Smart Antenna's industry-leading RF output power and sensitivity combine to offer greater coverage and performance over existing networks, ZyXEL WAC6500 makes one-to-one AP upgrade possible as your ultimate choice for 802.11ac migration.

Along with the ZyXEL Smart Antenna, the WAC6500 includes several other new features including innovative AP Flex™, tool-less mounting bracket, and many other software enhancements like ZON Utility, a complete product designed to streamline network installation and speed deployment for the best possible Wi-Fi experience.

Benefits

Breakthrough Smart Antenna adapts to any environment

The WAC6500 series is the industry's leading 802.11ac AP, thanks in part to its innovative Smart Antenna design. Featuring more than 700 optimized antenna patterns, the ZyXEL Smart Antenna continuously calculates the ideal physical-layer path for each individual client. This feature not only offers the best possible signal by shaping to various patterns, but it also mitigates interference from other wireless clients. The WAC6500's ultra-fast performance makes it perfect for delivering premium performance in interference-laden environments, such as conference centers, airports, educational facilities and other high-density venues. And the series' enhanced adaptability further simplifies one-to-one AP replacement.

Best-in-class coverage and performance

In a Wi-Fi market crowded with 802.11ac APs from a wide range of vendors, the WAC6500 series stands out with regard to performance and coverage due its unique RF design. The AP's three-stream hardware configuration powers up to 30 dBm while providing unequaled Rx sensitivity as low as -102 dBm. The ZyXEL Smart Antenna doubles the WAC6500 series' performance over conventional internal antennas, and performs three times (3x) better than legacy 802.11n APs

ZyXEL green

WAC6500 Series

802.11ac Dual Radio Unified Pro Access Point

Easy and instant deployment with AP Flex™, DCS, and tool-less bracket design

ZyXEL AP Flex™ eases installation by resolving the managed/standalone AP mode configuration, automatically integrating into the network environment with or without Dynamic Host Configuration Protocol (DHCP), eliminating the need for pre-installation preparation. Other helpful features include Dynamic Channel Selection (DCS), avoided the interference of co-channel and overlapping channel at initialization. In addition to software solutions, the WAC6500 series' simplifies installation through creative design features. For example, the universal and tool-less bracket design allows for flexible ceiling track mounting without the need for special tools. From software to hardware, the WAC6500 makes setup and operation fast and simple.

Efficient and reliable Wi-Fi network

The WAC6500 ensures users get the best possible overall network performance by utilizing load balancing and client steering. Load balancing allows administrators to set limits on network traffic and the number of clients associated with each AP. Client steering monitors the capabilities of each wireless client and steers them to the less congested band and better signal AP. When it comes to deployments in challenging cabling locations, wireless mesh networks help extend Wi-Fi coverage. ZyXEL's proprietary ZyMESH* creates reliable and resilient mesh links instantly. Yet the configuration is intuitive and centralized manageable on NXC controller. ZyMESH improves network reliability through true wireless connectivity with repeater APs selecting multiple routes to provide backup and failover for uninterrupted service. Together, these three technologies provide the WAC6500 with unbeatable efficiency and reliability.

ZyXEL ONE Network experience

Deploying and maintaining a wireless network can be a tedious and repetitive task for busy IT administrators. ZyXEL created the ZyXEL ONE Network to solve this problem by simplifying operations like network configuration, management and troubleshooting, allowing administrators to focus on more pressing priorities. The ZyXEL One Network offers an easy-to-use tool, ZyXEL ONE Network Utility (ZON Utility), to streamline network setup. This powerful utility enables ZyXEL networking hardware to detect and recognize each other, further facilitating easy maintenance via one-click remote functionality that includes factory reset and power cycling. The ZyXEL AP Configurator (ZAC) constructs a template for copying profiles to several APs to allow batch firmware upgrading and profile backups, saving even more valuable time. The ZyXEL Wireless Optimizer (ZWO) is a handy tool for centralizing management, including initial planning, deployment adjustment and after-sale maintenance. Now, architects can collect key performance data and reconfigure APs with the help of the ZWO utility. These are just a few of the many ways the ZyXEL One Network redefines network integration across a range of networking products—from switches to Wi-Fi APs to gateways.

Feature Highlights

ZyXEL Smart Antenna

ZyXEL Smart Antenna continuously applies a unique algorithm to compute the best physical-layer path for every individual client. It not only considers best signal, but also mitigates RF interference on over 700 optimized antenna patterns. The "switch-beam" technique mitigating RF interference runs at the physical layer, requiring no effort on the part of the end-user. The adaptive antenna design handles a variety of tough deployments, including high-capacity, high-performance and interference-laden environments like conference centers, airports, classrooms and other crowded venues.

ZyXEL AP Flex™

ZyXEL AP Flex™ includes Zero-touch AP mode changing and Automatic IP configuration. The Zero-touch AP mode setting detects if there is an existing controller and chooses stand-alone or managed mode. The Automatic IP configuration removes manual configuration, allowing the AP to set itself to fixed or dynamic IP automatically. With these two intelligent features, IT administrators can skip the two critical settings that were handled manually on legacy products, shifting focus to more critical configuration tasks.

Tool-less Installation

WAC6500 series features a creative design allowing installation of the AP in a variety of ceiling tracks without the need for tools. The variable width of ceiling tracks makes our bracket universally adaptable to any building structure.

Individual end-users can easily install the hardware, saving valuable time that could be better spent deploying additional APs.

Wireless Layer-2 Isolation

The layer-2 isolation protects private networks among client users, allowing users to access their shared devices without entering the rest of a private network for enhanced security. In addition, the intra-BSS blocking prevents peeping from Wi-Fi clients associated with same AP.

WPA2 Enterprise

WPA2 Enterprise Certified

ZyXEL WAC6500 series has been certified with industrial-strength WPA2 enterprise protection and has the wide-range support of Extensible Authentication Protocol (EAP) types. It can be seamlessly integrated with corporate RADIUS servers.

ZON Utility

ZyXEL ONE Network Utility

To streamline the management process, the WAC6500 series comes with the ZyXEL ONE Network (ZON) utility, allowing administrators to assign IP addresses to multiple APs through just one platform. Administrators can avoid the hassle logging into each AP to change the default IP addresses before physical installation.

ZyXEL AP Configurator

ZyXEL AP Configurator

While deploying a number of APs, repetitive configuration of each unit takes time and effort. ZyXEL AP Configurator (ZAC) builds templates that allow users to copy one profile to several APs, allowing batch firmware upgrades and profile backups in three easy steps to significantly reduce configuration time and effort.

ZyXEL Wireless Optimizer

ZyXEL Wireless Optimizer

ZyXEL Wireless Optimizer (ZWO) provides a powerful tool for centralized management covering initial planning, adjustment during deployment and after-sale maintenance of an AP network. Architects can simulate AP deployment on a map displaying the number of APs needed. During deployment, ZWO will also map actual signal coverage for architects to adjust their AP locations or configurations. After-sale, network administrators can access key performance details from ZWO, including channel in use, transmit retry rate and frame error rate, as well as the devices on the environment map. ZWO's user-friendly presentation saves time and facilitates quick response to the network problems.

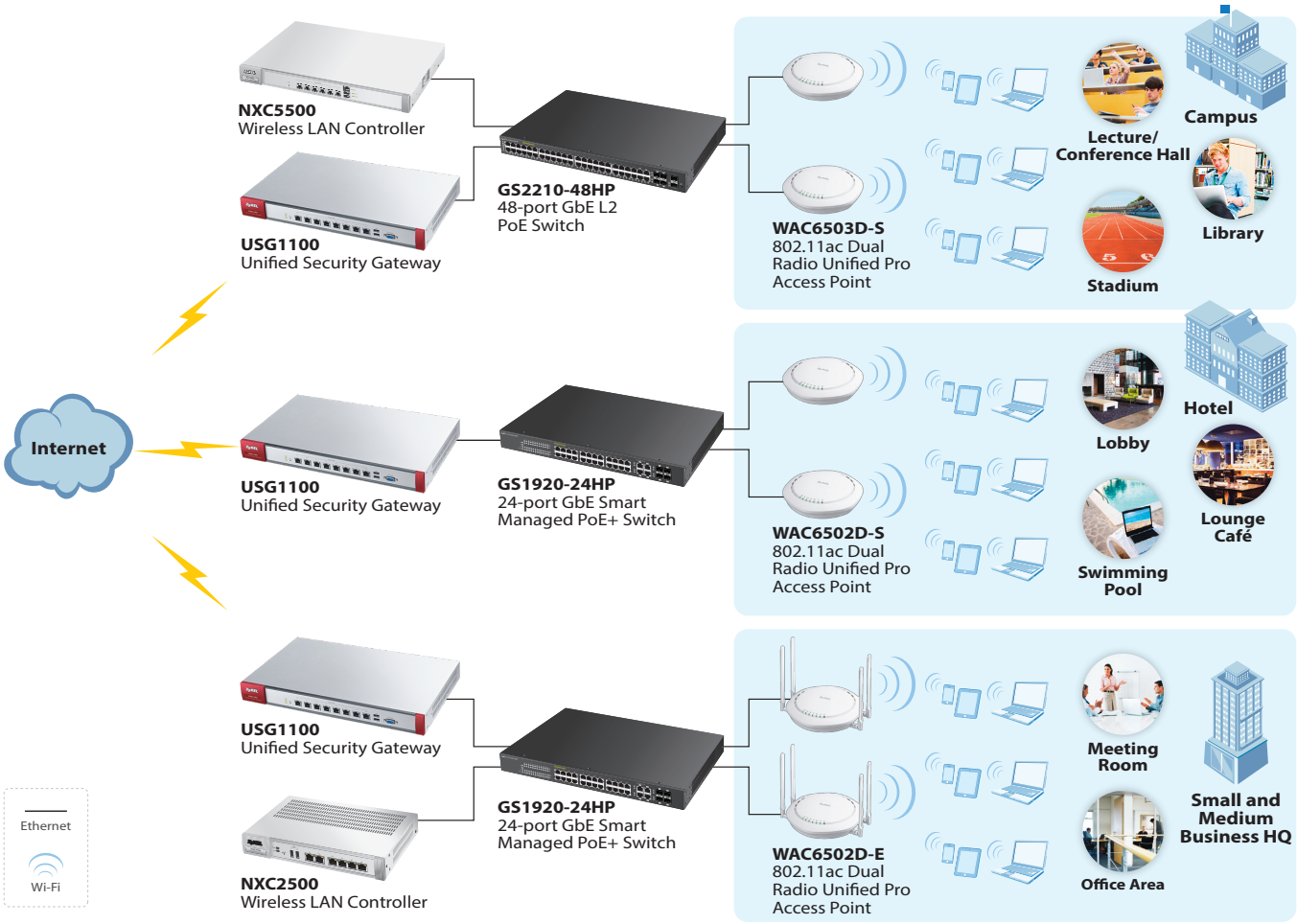
ZyMESH

ZyMESH*

Wireless Mesh is an array of access points automatically forming dynamic wireless links. Built on this foundation of mesh networking, ZyMESH is ZyXEL's proprietary protocol for creating wireless mesh links for easy configuration, optimized management and enhanced reliability.

*ZyMESH feature on WAC6500 series will be available in future release

Application Diagram



Specifications

Model		WAC6503D-S	WAC6502D-S	WAC6502D-E
Product name		802.11ac Dual Radio Unified Pro Access Point	802.11ac Dual Radio Unified Pro Access Point	802.11ac Dual Radio Unified Pro Access Point
Main Design				
Wireless frequency		2.4 and 5 GHz	2.4 and 5 GHz	2.4 and 5 GHz
Radio		2	2	2
RF Specifications				
Frequency band		2.4 GHz (IEEE 802.11 b/g/n) • USA (FCC): 2.412 to 2.462 GHz • Europe (ETSI): 2.412 to 2.472 GHz • Taiwan (TW): 2.412 to 2.462 GHz 5 GHz (IEEE 802.11 a/n/ac) • USA (FCC): 5.15 to 5.35 GHz; 5.725 to 5.850 GHz • European (ETSI): 5.15 to 5.35 GHz; 5.470 to 5.725 GHz • Taiwan (TW): 5.15 to 5.35 GHz; 5.725 to 5.850 GHz		
802.11n premium features		• 3x3 Multiple-Input Multiple-Output (MIMO) with three spatial streams • Maximal Ratio Combining (MRC) • 20-, 40- and 80-MHz channels • PHY data rates total up to 300 Mbps (11n) + 866 Mbps (11ac) • Packet aggregation: A-MPDU (Tx/Rx), A-MSDU (Tx/Rx) • Cyclic Delay Diversity (CSD) support • Maximum Likehood Demodulation (MLD) support • Low Density Parity Check (LDPC) support	• 2x2 Multiple-Input Multiple-Output (MIMO) with two spatial streams • Maximal Ratio Combining (MRC) • 20-, 40- and 80-MHz channels • PHY data rates total up to 300 Mbps (11n) + 866 Mbps (11ac) • Packet aggregation: A-MPDU (Tx/Rx), A-MSDU (Tx/Rx) • Cyclic Delay Diversity (CSD) support • Maximum Likehood Demodulation (MLD) support • Low Density Parity Check (LDPC) support	
Typical transmit output power (Conducted)	FCC 11b/g	29	28	28
	FCC 11g/n	29	28	28
	FCC 11a	30	28	28
	FCC 11n/a (ac)	30	28	28
	EU 11b/g	15	14	14
	EU 11g/n	15	14	14
	EU 11a	23	22	22
	EU 11n/a (ac)	23	22	22
Number of antenna		6 embedded smart antenna	4 embedded smart antenna	4 external
Antenna gain		4 dBi @2.4 GHz 6 dBi @5 GHz	4 dBi @2.4 GHz 6 dBi @5 GHz	5 dBi @ 2.4 GHz 7 dBi @ 5 GHz
Max association number (open system)		128	128	128
Support data rate		WAC6503D-S: •802.11a/g: 1, 2, 5.5, 6, 9, 11, 12, 18, 24, 36, 48, and 54 Mbps •802.11n: up to 450 Mbps in MCS15 (40 MHz) •802.11ac: up to 1300 Mbps in MCS9 (80 MHz)	WAC6502D-S and WAC6502D-E: •802.11a/g: 1, 2, 5.5, 6, 9, 11, 12, 18, 24, 36, 48, and 54 Mbps •802.11n: up to 300 Mbps in MCS15 (40 MHz) •802.11ac: up to 866 Mbps in MCS9 (80 MHz)	
Receive sensitivity		Min. Rx sensitivity up to -102 dBm	Min. Rx sensitivity up to -100 dBm	Min. Rx sensitivity up to -100 dBm
LAN				
Number of 10/100/1000M LAN		2	2	2
PoE		Yes	Yes	Yes
PoE power draw		17.04 W	15.12 W	15.12 W

Model	WAC6503D-S	WAC6502D-S	WAC6502D-E
WLAN Features			
WLAN maximum net throughput			
Mesh* AP (By License)	Yes (V4.2)	Yes (V4.2)	Yes (V4.2)
Mesh* AP for multiple SSID with VLAN (through tunnel mode)	Yes (V4.2)	Yes (V4.2)	Yes (V4.2)
Wireless Security			
WEP	Yes	Yes	Yes
WPA/WPA2-PSK	Yes	Yes	Yes
WPA/WPA2-Enterprise	Yes	Yes	Yes
WMM (Wi-Fi certified)	Yes	Yes	Yes
EAP types	EAP-TLS, EAP-TTLS, EAP-PEAP, EAP-FAST, EAP-AKA and EAP-SIM		
IEEE 802.1X	Yes	Yes	Yes
Number of SSID	16	16	16
Web authentication	Yes	Yes	Yes
MAC filtering	Yes	Yes	Yes
Layer-2 isolation	Yes	Yes	Yes
RADIUS authentication	Yes	Yes	Yes
Microsoft AD authentication	Yes	Yes	Yes
LDAP authentication	Yes	Yes	Yes
MAC authentication	Yes	Yes	Yes
Embedded RADIUS server	Yes	Yes	Yes
Rogue AP detection	Yes	Yes	Yes
Rogue AP containment	Yes	Yes	Yes
Firewall	Yes	Yes	Yes
Network			
IPv6 host	Yes	Yes	Yes
VLANs	Yes	Yes	Yes
DHCP client	Yes	Yes	Yes
QoS (PG)			
WMM	Yes	Yes	Yes
WMM power save	Yes	Yes	Yes
DiffServ marking	Yes	Yes	Yes
Management			
ZON utility	•Discovery of ZyXEL switches, APs and gateways* • Centralized and batch configurations ▪ IP configuration ▪ IP renew ▪ Device reboot ▪ Device locating ▪ Web GUI access ▪ Firmware upgrade ▪ Password configuration ▪ One-click quick association with ZyXEL AP Configurator (ZAC)		
ZyXEL AP configurator	• Batch AP configuration • Batch AP firmware upgrade • Batch AP profile backup		
ZyXEL wireless optimizer	• Wi-Fi AP Planning • Wi-Fi coverage detection • Wireless health management		
Standalone AP mode	Yes	Yes	Yes
Managed AP mode	Yes	Yes	Yes
CLI	Yes	Yes	Yes
Web UI	Yes	Yes	Yes
SNMP	Yes	Yes	Yes
Others			
Plenum rating	Yes	Yes	Yes
Kensington lock support	Yes	Yes	Yes
Power supply	Input: AC 100 - 240 V -50/60 Hz 0.3 A; Output: DC +12 V 2 A		
MTBF (hr)	44,000	44,000	44,000

WAC6500 Series
802.11ac Dual Radio Unified Pro Access Point

Model		WAC6503D-S	WAC6502D-S	WAC6502D-E
Standard Compliance				
Ethernet		• IEEE 802.3 • IEEE 802.3u • IEEE 802.11ab • IEEE 802.3au • IEEE 802.3az • IEEE 802.3at/af (af mode only support 1TX3RX)	• IEEE 802.3 • IEEE 802.3u • IEEE 802.11ab • IEEE 802.3au • IEEE 802.3az • IEEE 802.3at/af (af mode only support 1TX2RX)	
PoE		IEEE 802.3af, IEEE 802.3at		
WLAN		• 802.11b: DBPSK, DQPSK, CCK • 802.11g: BPSK, QPSK, 16-QAM, 64-QAM • 802.11a: BPSK, QPSK, 16-QAM, 64-QAM • 802.11n: BPSK, QPSK, 16-QAM, 64-QAM • 802.11ac: BPSK, QPSK, 64-QAM, 256-QAM		
Certifications				
Radio		FCC Part 15C, FCC Part 15E, ETSI EN 300 328, EN 301 893, LP0002, EN 60601-1-2		
EMC		FCC Part 15B, EN 301 489-1, EN 301 489-17, EN55022, EN55024, EN61000-3-2/-3, BSMI CNS13438		
Safety		EN 60950-1, IEC 60950-1, BSMI CNS14336-1		
Physical Specifications				
Item	**Dimensions (WxDxH)(mm/in.)**	236 x 227 x 62/9.28 x 8.95 x 2.43	236 x 227 x 62/9.28 x 8.95 x 2.43	236 x 227 x 62/9.28 x 8.95 x 2.43
	Weight (g/lb.)	982/2.17	961/2.12	841/1.86
Packing	**Dimensions (WxDxH)(mm/in.)**	308 x 323 x 127/ 12.13 x 12.72 x 5.00	308 x 323 x 127/ 12.13 x 12.72 x 5.00	308 x 323 x 127/ 12.13 x 12.72 x 5.00
	Weight (g/lb.)	1743/3.85	1722/3.81	1699/3.75
Included accessories		• Ceiling mount plate •Mounting screws	• Ceiling mount plate •Mounting screws	• External antenna • Ceiling mount plate •Mounting screws
Environmental Specifications				
Operating	**Temperature**	0°C to 50°C/32°F to 122°F	0°C to 50°C/32°F to 122°F	0°C to 50°C/32°F to 122°F
	Humidity	10% to 90% (non-condensing)	10% to 90% (non-condensing)	10% to 90% (non-condensing)
Storage	**Temperature**	-40°C to 70°C/-40°F to 158°F	-40°C to 70°C/-40°F to 158°F	-40°C to 70°C/-40°F to 158°F
	Humidity	10% to 90%	10% to 90%	10% to 90%

* Gateway supporting ZON utility is scheduled for future release.

For more product information, visit us on the web at www.ZyXEL.com

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